



Case Report

Delayed brain reexpansion in schizophrenic patient affected by trabecular type chronic subdural hematoma

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ABSTRACT

Background: Chronic subdural hematoma (cSDH) represents a complex and unpredictable disease, characterized by high morbidity and mortality, especially in elderly patients. Factors affecting the postoperative brain reexpansion along to cSDH recurrence have not been yet adequately investigated. The authors presented the case of a schizophrenic patient affected by trabecular type cSDH that presented a delayed brain reexpansion despite a craniotomy and membranotomy.

Case Description: A 51-year-old female patient with diagnosis of schizophrenia was admitted to the emergency department with GCS score of 5/15 and right anisocoria. An urgent brain CT revealed a trabecular right cSDH (35 mm in maximum diameter) with recent bleeding. After surgery, a brain CT scan showed a markedly reduced brain reexpansion and pneumocephalus. Nevertheless, postoperative 7-day brain CT documented a progressive brain reexpansion with reduced midline shift.

Conclusion: According to our opinion, anatomopathological alterations in schizophrenia reduce normal brain compliance and increasing elastance, thus modifying the normal timing of reexpansion after cSDH drainage, also after craniotomy and membranotomy. Although postoperative pneumocephalus is a well-known cause of hindered reexpansion, this could be due to anatomical alterations in schizophrenia. Such factors must be considered in the preoperative planning but mostly in the postoperative management.

Keywords: Chronic subdural hematoma, Craniotomy, Pneumocephalus, Schizophrenia, Trabecular

INTRODUCTION

Chronic subdural hematoma (cSDH) represents a complex and unpredictable disease, characterized by high morbidity and mortality, especially in elderly patients. There is no univocal indication of the cSDH treatment, and common surgical techniques include burr hole craniostomy, twist drill craniostomy, and craniotomy. Factors affecting the postoperative

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brain reexpansion along to cSDH recurrence have not been yet adequately investigated. In schizophrenia, micro- and macroscopic anatomopathological alterations were described, such as astrogliosis and widespread pial gliosis.^[7,13] The authors presented the case of a schizophrenic patient affected by trabecular type cSDH that presented a delayed brain reexpansion despite a craniotomy and membranotomy.

CASE DESCRIPTION

A 51-year-old female patient with diagnosis of schizophrenia (positive symptoms) was admitted to the emergency department with GCS score of 5/15 and right anisocoria. Multiple minor self-inflicted head trauma was reported. An urgent brain CT revealed a trabecular (Nakaguchi type G) right cSDH (35 mm in maximum diameter) with recent bleeding [Figure 1]. The patient underwent a right frontoparietal craniotomy with membranotomy. A large hematoma with multiple septa was drained and a subdural drainage was placed. In the immediate postoperative course, the patient presented anisocoria resolution and despite hematoma drainage and membranectomy, brain CT showed a markedly reduced brain reexpansion and pneumocephalus [Figure 2]. The patient progressively improved, with consciousness recovery and walking without assistance. Postoperative 7-day brain CT documented a progressive brain reexpansion with reduced midline shift [Figure 3].

DISCUSSION

A reduced compliance and an increased brain elastance are the main cause probably related to a delayed brain reexpansion. In patients with schizophrenia, anatomopathological alterations, as previously mentioned, can alter brain compliance, promoting elastance. It measures the stiffness

of a system, and it is influenced by cerebrovascular volume, subpial brain tissues, and meningeal membranes.^[13] Age, in particular, is the main factor influencing elastance; other important factors involved are represented by reduction of cerebral blood flow or by a well-organized neomembranes.^[7] After cSDH evacuation, a reduction of brain compliance with a delayed reexpansion can be typically found in the elderly, because of a physiological cortical atrophy and/or hypodehydration.^[11,14] Moreover, chronic vasculopathy is often associated to multiple asymptomatic hypoxic-ischemic insults that can modify physiological brain compliance and postoperative pneumocephalus is certainly one cause of hindered reexpansion.^[3,5,8] Nevertheless, this is the case of a young patient, without a previous history of vasculopathy but with a diagnosis of schizophrenia. According to literature data, astrogliosis and widespread pial gliosis with increased expression of inflammatory mediators are prevalent in this

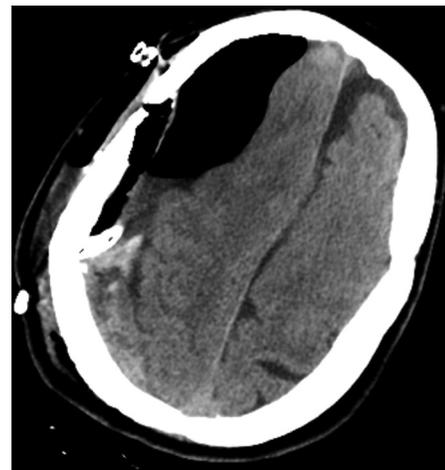


Figure 2: Immediate postoperative brain CT scan showing a markedly reduced brain reexpansion and pneumocephalus.

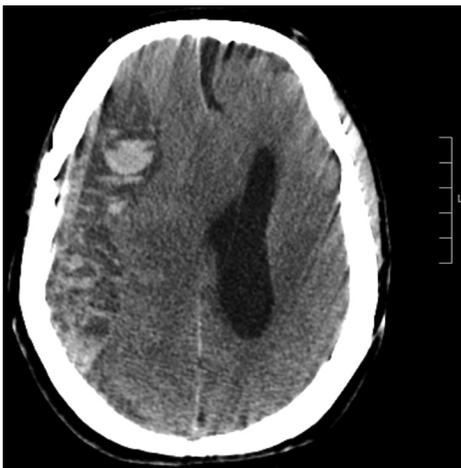


Figure 1: Preoperative brain CT scan showing a trabecular (Nakaguchi type G) right cSDH (35 mm in maximum diameter) with recent bleeding and 17 mm midline shift.

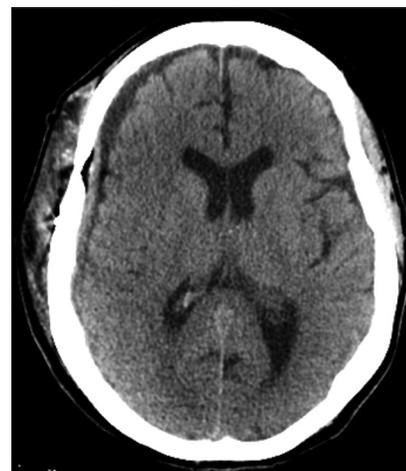


Figure 3: Postoperative 7-day brain CT scan documented a progressive brain reexpansion with reduced midline shift.

disease, modifying brain elastance. Another neuroanatomical abnormality typically found in schizophrenic patients' can be related to an extensive cortical thickness more evident in frontal and temporal regions.^[12] As the case presented, in fact, an immediate reexpansion of parenchyma, as expected, was not achieved, despite patient's young age.^[1,2,4,6] The presence of the inner membrane tenaciously attached to the arachnoid could mechanically reduce the rate of reexpansion.^[9] In our case, the opening of this membrane was performed. Many factors, as mentioned, can modify brain compliance, nevertheless, anatomopathological anomalies and in particular a fibrous-gliotic degeneration play clearly a fundamental role in hindering physiological brain reexpansion after surgery.^[10]

CONCLUSION

According to our opinion, anatomopathological alterations in schizophrenia reduce normal brain compliance and increasing elastance, thus modifying the normal timing of reexpansion after cSDH drainage, also after craniotomy and membranotomy. Although postoperative pneumocephalus is a well-known cause of hindered reexpansion, this could be due to anatomical alterations in schizophrenia. Such factors must be considered in the preoperative planning but mostly in the postoperative management.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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